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10/583,986	06/22/2006	Philip Barrowclough	059864.01884	8417

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EXAMINER	
SIM, YONG H	

ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/583,986	BARROWCLOUGH, PHILIP	
	Examiner	Art Unit	
	YONG H. SIM	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 September 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *37-50,52-60,63-65 and 68-76* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *37-50,52-60,63-65 and 68-76* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/17/2010 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 37 – 46, 48, 52 – 60, 63 – 65 and 68 – 76 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. **Claims 37 – 46, 48, 52 – 60, 63 – 65 and 68 – 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nading et al (U.S Patent # 6,369,800),**

hereinafter referenced as Nading in view of Ely et al. (US Patent # 4,480,182), hereinafter referenced as Ely and further in view of Terui at all (Hereinafter "Terui" US 4,365,862).

Regarding **claim 37**, Nading discloses:

a light guide comprising a surface configured to internally reflect a generated light signal from a transmitter [light source 30A, column 3, lines 55-56, and figure 2] to a receiver [optical detector 32A and light guide 20A, column 3, lines 52-54, and figure 2];

and an actuator comprising an actuator surface, the actuator surface comprising at least a portion which is movable between a first position spaced apart from a portion of said light guide surface, with a gas or fluid between the actuator surface and the light guide surface, and a second position which is in contact with the portion of the light guide surface [plunger 16A, column 3, lines 54-61, and figure 2],

wherein the portion of the actuator surface has a different refractive index than the gas or fluid, and wherein in use the relative refractive index is changed at a contacted portion of the light guide surface, thereby altering the light signal received by the receiver [plunger 16A has a light reflective material or coating 36, column 3, lines 61-66, and figure 2].

But, Nading does not expressly disclose a actuator surface that is deformable and wherein the portion of the light guide surface has a higher refractive index than the portion of the actuator surface and wherein the portion of the actuator surface is at the second position in contact with the portion of the light guide surface, the relative

refractive index at the contacted portion of the light guide surface is increased and an amount of reflected light is decreased.

However, Ely teaches a single plane optical membrane switch and keyboard comprising a light conducting channel and a deformable light absorbing plastic sheet with an index or refraction of sheet different than that of the light conducting channel to change the relative index of reference of the light conducting channel (Ely: Col. 4, lines 25 – 56. Fig. 6. As can be seen in Fig. 6, when the plastic sheet comes in contact with the index of refraction is changed to activate a key.).

Therefore, taking the combined teachings of Nading and Ely, as a whole, it would have been obvious to a person having ordinary skill in the art to incorporate the idea of having a deformable light absorbing plastic sheet and light guide as taught by Ely into the device of Nading to obtain an apparatus comprising a light guide and an actuator having a non-reflective actuator surface wherein the non-reflective actuator surface has a different refractive index than the light guide surface to allow reduction of manufacturing cost by simplifying the button to have a flat surface.

But, Nading and Ely fails to teach wherein the portion of the light guide surface has a higher refractive index than the portion of the actuator surface and the relative refractive index at the contacted portion of the light guide surface is increased.

However, Terui teaches an optical switch comprising a substrate with a refractive index n1 which is transparent with respect to a guided light beam, an optical waveguide film with a refractive index n2 which is formed on the substrate, a low-refractive-index region with a refractive index n2' which is smaller by a predetermined value than the

refractive index n2 formed at a predetermined location in the optical waveguide film, **a movable dielectric chip** with a refractive index n4 which is transparent with respect to the guided light beam and a relative distance of which is adjustable relative to a plane including a low-refractive-index region and a vicinal area of the optical waveguide film in the vicinity of the region, and an intermediate layer with a refractive index n3 disposed between the plane and the movable dielectric chip wherein the refractive indices n1, n2, n2', n3 and n4 have a relationship of n2 > n2' > n4 > (n1, n3) [Such relationship satisfies the relative refractive index being increased when the waveguide film and the movable dielectric chip touches], and the effective refractive indices of the optical waveguide film and the low-refractive index region are varied by changing the distance between the plane and the movable dielectric chip, so that guided light beam incident to the region is deflected (Col. 2, line 58 – Col. 3, line 12).

Therefore, taking the combined teachings of Nading, Ely and Terui, as a whole, it would have been obvious to a person having ordinary skill in the art to incorporate the idea of having an optical switching comprising a waveguide and a movable dielectric chip, wherein the dielectric chip has a lower refractive index than the waveguide to increase the relative refractive index when contacted and deflect the light beam as taught by Terui into the light guide and deformable actuator as taught by Nading and Ely to obtain a light guide and deformable actuator wherein the waveguide has a higher refractive index than the deformable actuator and the portion of the light guide surface has a higher refractive index than the portion of the actuator surface and the relative refractive index at the contacted portion of the light guide surface is increased to alter

the light signal received by a receiver to achieve satisfactory deflection angle for accurate detection of the actuator movement.

Regarding **claim 38**, Nading, Ely and Terui disclose everything as applied above (see claim 37), in addition, Nading discloses wherein the receiver is configured to output a signal indicative of a position of the contacted portion of the light guide surface [column 3, lines 54-61, and figure 2].

Regarding **claim 39**, Nading, Ely and Terui disclose everything claimed as applied above (see claim 37), in addition, Nading discloses wherein the receiver is configured to use the received signal to control a position of an element [column 3, lines 54-61, and figure 2]. Although Nading does not explicitly teach controlling the position of an element, the examiner takes official notice that it was well known in the art at the time the invention was made to have buttons (keypads) on a cell phone that control the position of a cursor on the display of the cell phone. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the keypad using the keys as taught by Nading on a keypad for such a cell phone for the purpose of providing a simple structure to both illuminate the key and determine when a key was been pressed by a user.

Regarding **claim 40**, Nading, Ely and Terui disclose everything as applied above (see claim 37), in addition, Nading discloses wherein the second position is at a

selected one of a plurality of portions on the surface of the light guide [column 3, lines 55-62, figure 2].

Regarding **claim 41**, Nading, Ely and Terui disclose everything as applied above (see claim 37), in addition, Ely discloses wherein a plurality of transmitters is provided [See Fig.3].

Regarding **claim 42**, Nading, Ely and Terui disclose everything as applied above (see claim 41), however, Nading fails to explicitly disclose wherein the transmitters are configured to pulse alternatively. The Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time the invention was made that when the keys are implemented in a keypad as taught by Nading, when two different keys are pressed one after another, such as when someone is typing a text message, the transmitters for each key pulse alternatively because the keys only reflect light back to the receiver when pressed. When the keys are pressed one after another, they light from the transmitter of the first key is pulsed to its respective receiver and then the transmitter of the second key is pulsed to its respective receiver, hence pulsing alternatively.

Regarding **claim 43**, Nading, Ely and Terui disclose everything as applied above (see claim 37), in addition, Ely discloses wherein a plurality of receivers is provided [See Fig. 3].

Regarding **claim 44**, Nading, Ely and Terui disclose everything as applied above (see claim 37), in addition, Nading discloses wherein the transmitter comprises an light-emitting diode [column 5, lines 24-27].

Regarding **claim 45**, Nading, Ely and Terui disclose everything as applied above (see claim 37), in addition, Nading discloses wherein the receiver comprises a photodiode [optical detector 32A, column 3, lines 53, and figure 2].

Nading does not disclose expressly the optical detector is a photodiode.

At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to implement the optical detector using a photodiode because Applicant has not disclosed that using a photodiode provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with any type of optical detector because the optical detector only needs to be able to determine if light is or isn't present.

Therefore, it would have been an obvious matter of design choice to modify Nading to obtain the invention as specified in claim 45.

Regarding **claim 46**, Nading, Ely and Terui disclose everything as applied above (see claim 37), in addition, Ely discloses wherein four transmitters and a single receiver are provided in a cross configuration having four comers and a center, each one of the transmitters being disposed at one of the comers and the receiver being disposed at the

center [See Figs. 1 and 3. The optical channels are construed as transmitters, and the channels are disposed in all corners and a light detectors are disposed at the center of some of the optical channels creating cross figure.].

Regarding **claim 48**, Nading, Ely and Terui disclose everything as applied above (see claim 37).

Nading and Ely doe not disclose expressly a hemispherical surface.

At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to round the edges of the protrusion on the bottom of the plunger 16A because Applicant has not disclosed that having a hemispherical surface provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the surface shaped as a trapezoid because either type of surface allows for light to be reflected to the receiver to determine if the key has been pressed.

Therefore, it would have been an obvious matter of design choice to modify Nading to obtain the invention as specified in claim 48.

Regarding **claim 52**, Nading, Ely and Terui disclose everything as applied above (see claim 37), in addition, Nading discloses wherein said actuator has an upper portion in the form of a stick for actuation by a user [top of plunger 16A, figure 2].

Regarding **claim 53**, Nading, Ely and Terui disclose everything as applied above (see claim 37), in addition, Nading discloses wherein said actuator comprises an arcuate disk disposed on said surface of said actuator [top of plunger 16A, figure 2].

Regarding **claim 54**, Nading, Ely and Terui disclose everything as applied above (see claim 37), in addition, Nading discloses wherein the transmitter and the receiver are disposed in a layer on an opposite side of said light guide to said actuator [figure 2].

Regarding **claim 55**, Nading, Ely and Terui disclose everything claimed as applied above (see claim 37), in addition, Nading discloses processor configured to process the signal received by each receiver and output a control signal to control a position of an element [processing device for processing the or each signal received by the or each receiver and outputting a control signal to control the position of the element column 3, lines 54-61, and figure 2]. Although Nading does not explicitly teach controlling the position of an element or using a processor, the examiner takes official notice that it was well known in the art at the time the invention was made to have buttons (keypads) on a cell phone that control the position of a cursor on the display of the cell phone. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the keypad using the keys as taught by Nading on a keypad for such a cell phone for the purpose of providing a simple structure to both illuminate the key and determine when a key was been pressed by a user. This combination would inherently teach a processor because some type of

processor would be necessary to perform the specific function of moving the cursor based on the user pressing the buttons.

Regarding **claim 56**, Nading, Ely and Terui disclose everything claimed as applied above (see claim 37), although Nading does not explicitly teach a display configured to display an element, wherein in use the position of the element on the display is controlled, the examiner takes official notice that it was well known in the art at the time the invention was made to have buttons (keypads) on a cell phone that control the position of a cursor on the display of the cell phone. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the keypad using the keys as taught by Nading on a keypad for such a cell phone for the purpose of providing a simple structure to both illuminate the key and determine when a key was been pressed by a user.

Regarding **claim 57**, Nading, Ely and Terui disclose everything claimed as applied above (see claim 37), however, Nading fails to disclose "wherein said received signal is used to produce a radio signal to control a radio controlled device".

However, the Examiner takes official notice that it was well known to people of ordinary skill in the art at the time the invention was made that remote controls for radio control devices (i.e. RC cars) used buttons to control the radio controlled device. Therefore it would have been obvious to use the key or button taught by Nading as the

buttons on one of these remotes for the purpose of providing a simple structure to both illuminate the key and determine when a key was been pressed by a user.

Regarding **claim 58**, Nading, Ely and Terui disclose everything as applied above (see claim 37), in addition, Nading discloses wherein the actuator surface is exposed at the exterior of the apparatus [figure 2].

Regarding **claim 59**, Nading, Ely and Terui disclose everything as applied above (see claim 37), in addition, Nading discloses wherein the actuator surface is manually actuable by a user of the apparatus [key 18A is operated by a user, column 3, lines 58-61, and figure 2].

Regarding **claim 60**, Nading, Ely and Terui disclose everything as applied above (see claim 37), in addition, Nading discloses wherein the apparatus comprises a hand held electronic device (See Fig. 14), however, Nading does not expressly teach that the electronic device is a hand held device.

However, the Examiner takes official notice that it was well known to people of ordinary skill in the art at the time the invention was made to have an illuminating keys on a handheld mp3 player or a cellular phone. Therefore it would have been obvious to use the key or button taught by Nading as the buttons on one of these handheld devices for the purpose of providing a simple structure to both illuminate the key and determine when a key was been pressed by a user.

Regarding **claim 63**, Nading, Ely and Terui disclose everything as applied above (see claim 37), in addition, Nading discloses wherein the actuator surface is actuable by a user via a key of the apparatus [key 18, column 3, lines 32-33, and figure 1].

Regarding **claim 64**, Nading, Ely and Terui disclose everything as applied above (see claim 63), in addition, Nading discloses wherein the key comprises part of a keypad [keypad 12, column 3, lines 32-33, and figure 1].

Regarding **claim 65,** Nading discloses;

reflecting a generated light signal off a surface [light source 30A and plunger 16a, column 3, lines 54-66, figure 2],

wherein a relative refractive index between materials on either side of the surface is changed, thereby altering the reflected light signal, the reflected light signal being received and used to control a position of an element [column 3, lines 54-66, figure 2].

But, Nading does not disclose expressly a non-reflective actuator surface that is deformable.

However, Ely teaches a single plane optical membrane switch and keyboard comprising a light conducting channel and a deformable light absorbing plastic sheet with an index or refraction of sheet different than that of the light conducting channel to change the relative index of reference of the light conducting channel (Ely: Col. 4, lines

25 – 56. Fig. 6. As can be seen in Fig. 6, when the plastic sheet comes in contact with the index of refraction is changed to activate a key.).

Therefore, taking the combined teachings of Nading and Ely, as a whole, it would have been obvious to a person having ordinary skill in the art to incorporate the idea of having a deformable light absorbing plastic sheet and light guide as taught by Ely into the device of Nading to obtain an apparatus comprising a light guide and a deformable actuator having a non-reflective actuator surface wherein the non-reflective actuator surface has a different refractive index than the light guide surface to allow reduction of manufacturing cost by simplifying the button to have a flat surface.

Nading does not explicitly teach controlling the position of an element, the examiner takes official notice that it was well known in the art at the time the invention was made to have buttons (keypads) on a cell phone that control the position of a cursor on the display of the cell phone. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the keypad using the keys as taught by Nading on a keypad for such a cell phone for the purpose of providing a simple structure to both illuminate the key and determine when a key was been pressed by a user.

But, Nading and Ely fails to teach wherein the portion of the surface has a higher refractive index than the portion of the actuator surface and the relative refractive index at the contacted portion of the surface is increased.

However, Terui teaches an optical switch comprising a substrate with a refractive index n1 which is transparent with respect to a guided light beam, an optical waveguide

film with a refractive index n2 which is formed on the substrate, a low-refractive-index region with a refractive index n2' which is smaller by a predetermined value than the refractive index n2 formed at a predetermined location in the optical waveguide film, **a movable dielectric chip** with a refractive index n4 which is transparent with respect to the guided light beam and a relative distance of which is adjustable relative to a plane including a low-refractive-index region and a vicinal area of the optical waveguide film in the vicinity of the region, and an intermediate layer with a refractive index n3 disposed between the plane and the movable dielectric chip wherein the refractive indices n1, n2, n2', n3 and n4 have a relationship of n2 > n2' > n4 > (n1, n3) [Such relationship satisfies the relative refractive index being increased when the waveguide film and the movable dielectric chip touches], and the effective refractive indices of the optical waveguide film and the low-refractive index region are varied by changing the distance between the plane and the movable dielectric chip, so that guided light beam incident to the region is deflected (Col. 2, line 58 – Col. 3, line 12).

Therefore, taking the combined teachings of Nading, Ely and Terui, as a whole, it would have been obvious to a person having ordinary skill in the art to incorporate the idea of having an optical switching comprising a waveguide and a movable dielectric chip, wherein the dielectric chip has a lower refractive index than the waveguide to increase the relative refractive index when contacted and deflect the light beam as taught by Terui into the surface and deformable actuator as taught by Nading and Ely to obtain a surface and deformable actuator wherein the waveguide has a higher refractive index than the deformable actuator and the portion of the light guide surface has a

higher refractive index than the portion of the actuator surface and the relative refractive index at the contacted portion of the light guide surface is increased to alter the light signal received by a receiver to achieve satisfactory deflection angle for accurate detection of the actuator movement.

Regarding **claim 68**, Nading, Ely and Terui disclose everything as applied above (see claim 37), in addition, Nading discloses wherein the actuator comprises a key or button [key 18 & 18A, column 3, lines 32-33, and figure 1 and 2].

Regarding **claim 69**, Nading, Ely and Terui disclose everything as applied above (see claim 37), in addition, Nading discloses wherein said apparatus further comprises a key configured to move said actuator in use [key 18 & 18A, column 3, lines 32-33, and figure 1 and 2].

Regarding **claim 70**, Nading, Ely and Terui disclose everything as applied above (see claim 68), in addition, Nading discloses wherein said apparatus comprises a plurality of keys [keypad 12, column 3, lines 32-33, and figure 1]. Although Nading does not explicitly teach that the keypad has a plurality of keys, the Examiner takes official notice that it would have been well known to one of ordinary skill in the art at the time the invention was made that a keypad has multiple keys.

Regarding **claim 71**, the limitations of this claim are substantially similar to those found in independent claim 37 and is therefore rejected in a similar manner.

Regarding **claim 72**, Nading, Ely and Terui disclose everything as applied above (see claim 65), in addition, the limitations of this claim are substantially similar to those found in independent claim 38 and it is therefore rejected in a similar manner.

Regarding **claim 73**, Nading, Ely and Terui disclose everything as applied above (see claim 65), in addition, the limitations of this claim are substantially similar to those found in independent claim 55 and it is therefore rejected in a similar manner.

Regarding **claim 74**, Nading, Ely and Terui disclose everything as applied above (see claim 65), in addition, the limitations of this claim are substantially similar to those found in independent claim 56 and it is therefore rejected in a similar manner.

Regarding **claim 75**, Nading, Ely and Terui disclose everything as applied above (see claim 65), in addition, the limitations of this claim are substantially similar to those found in independent claim 65 and it is therefore rejected in a similar manner.

Regarding **claim 76**, Nading, Ely and Terui disclose everything as applied above (see claim 65), in addition, the limitations of this claim are substantially similar to those found in independent claim 37 and it is therefore rejected in a similar manner.

2. **Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nading, Ely and Terui in view of Ochiai (U.S Patent # 6,196,691), hereinafter referenced as Ochiai.**

Regarding **claim 47**, Nading, Ely and Terui disclose everything claimed as applied above (see claim 37), however, fail to disclose *"wherein the light guide includes an optical grating."*

In a similar field of endeavor, Ochiai discloses wherein the light guide includes an optical grating [diffraction grating, column 2, line 66 to column 4, line 7].

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nading, Ely and Terui by specifically providing *"wherein the light guide includes an optical grating"*, as taught by Ochiai, for the purpose of obtaining high, uniform brightness even with use of point light sources and reduce power consumption [Ochiai, column 4, lines 1-7].

3. **Claims 49 – 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nading, Ely and Terui in view of Wingett (U.S Publication # 2002/0061735), hereinafter referenced as Wingett.**

Regarding **claim 49**, Nading, Ely and Terui disclose everything claimed as applied above (see claim 37), however, fail to disclose *"wherein said surface of said actuator is supported by one or more side walls."*

In a similar field of endeavor, Wingett discloses wherein said surface of said actuator is supported by one or more side walls [bridging membrane 27, paragraph 0032, and figure 5].

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nading, Ely and Terui by specifically providing *"wherein said surface of said actuator is supported by one or more side walls"*, as taught by Wingett, for the purpose of resist tilting of the key [Wingett, paragraph 0032].

Regarding **claim 50**, Nading, Ely, Terui and Wingett disclose everything claimed as applied above (see claim 49), in addition, Wingett discloses wherein said one or more side walls are deformable bridging membrane 27 can be stretched, paragraph 0032, and figure 5].

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YONG H. SIM whose telephone number is (571)270-1189. The examiner can normally be reached on Monday - Friday (Alternate Fridays off) 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/YONG H SIM/
Examiner, Art Unit 2629
6/16/2011